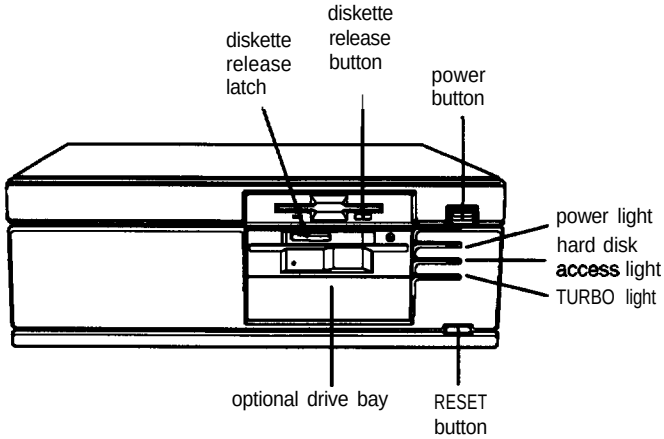
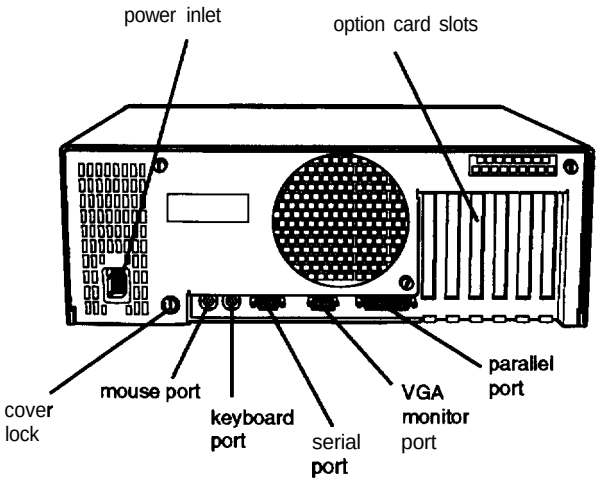




Computer Specifications

CPU and Memory

CPU (on card)	486SX/25 card: Intel 486SX, 25 MHz microprocessor soldered on CPU card; additional socket for optional Intel ODP486SX/25 OverDrive module to double internal clock speed (50 MHz); OverDrive module cannot be installed if 487SX/25 microprocessor chip is installed in shared socket 486DX/33 card: Intel 486DX, 33 MHz microprocessor socketed on CPU card; additional socket for optional Intel ODP486DX/33 OverDrive module to double internal clock speed (66 MHz) 486DX2/66 card: Intel 486DX2,66 MHz microprocessor socketed on CPU card; additional socket for optional (future) Intel OverDrive module
System speed	High, low, and automatic speeds available; high speed is CPU dependent, low speed is simulated 8 MHz speed, automatic speed switches from high to low only for diskette drive access; speed selection through SETUP, keyboard command, or ESPEED program; 0 wait state memory access at high speed
Memory	4MB RAM standard soldered on main system board; expandable using 1MB, 4MB, 16MB, or 64MB SIMMs to 128MB (maximum); SIMMs must be 36-bit, fast-page mode type with 70 ns (or faster) access speed
ROM	128KB system BIOS ROM and SETUP code located in FLASH memory device on CPU card; 64KB boot ROM contained in EPROM on main system board
Video RAM	1MB VRAM on main system board; additional 1MB VRAM on optional enhanced video daughterboard (2MB VRAM maximum)
Shadow RAM	Automatic shadowing of system and VGA BIOS ROM into RAM; shadow RAM address control selectable through SETUP
Cache	8KB of internal cache (built into the microprocessor); cache testing and address control selectable through SETUP
VirtualCache	Epson proprietary VirtualCache feature automatically creates a virtual cache buffer the size of maximum system memory
Math coprocessor	486SX/25 card: socket for optional Intel 487SX, 25 MHz microprocessor chip with built-in math coprocessor; microprocessor chip cannot be installed if OverDrive module is installed in shared socket 486DX/33 card: math coprocessor built into the 486DX microprocessor; additional socket for optional Weitek 4167, 33 MHz math coprocessor 486DX2/66 card: math coprocessor built into the 486DX2 microprocessor; additional socket for optional Weitek 4167, 33 MHz math coprocessor
Clock/calendar	Real-time clock, calendar, and CMOS RAM socketed on main system board; separate battery backup

OverDrive Module	486SX/25 card: socket for optional Intel ODP486SX/25 OverDrive module to double internal clock speed (50 MHz); module cannot be installed if 487SX/25 microprocessor chip is installed in shared socket 486DX/33 card: socket for optional Intel ODP486DX/33 OverDrive module to double internal clock speed (66 MHz) 486DX2/66 card: socket for optional (future) Intel OverDrive module

Controllers

Video	Chips and Technologies 64200 Wingine VGA controller on main system board; Brooktree® RAMDAC on video daughterboard provides resolutions up to 1024 x 768; optional enhanced video daughterboard provides resolutions up to 1280 x 1024 and 24-bit true color display
Diskette	Controller on main system board supports up to two diskette drives and one tape drive
Hard disk	Interface on main system board supports up to two IDE hard disk drives with built-in controllers

Interfaces

Monitor	VGA interface built into video daughter-board for analog or multifrequency VGA monitor; 15-pin, D-shell connector
Parallel	One standard 8-bit parallel, mono- or bi-directional interface built into main system board; port assignment and I/O address selectable through SETUP; 25-pin, D-shell connector
Serial	One RS-232C, programmable, asynchronous interface built into main system board; port assignment and I/O address selectable through SETUP; 9-pin, D-shell connector
Keyboard	PS/2 compatible keyboard interface built into main system board; keyboard speed, delay, and num lock settings selectable through SETUP; 6-pin, mini DIN connector
Mouse	PS/2 compatible mouse interface built into main system board; 6-pin, mini DIN connector
Option slots	Six standard 16-bit I/O expansion slots; ISA compatible; 8 MHz bus speed
Speaker	Internal; operation controllable through SETUP and volume selectable by software
Alternate VGA	IBM compatible VGA pass-through interface built into main system board; 26-pin connector
Mass Storage	Up to five drives maximum; one full-height or two half-height internal drives; one third-height and two half-height, or one third-height and one full-height, externally-accessible drives
Keyboard	Detachable; two-position height; 101 or 102 sculpted keys; country-dependent main typewriter keyboard; numeric/cursor control keypad; four-key cursor control keypad; 12 function keys

Power Supply

Type	200 Watt, fan-cooled, automatic input voltage sensing, thermally protected
Input ranges	98 to 132 VAC and 195 to 264 VAC
Maximum outputs	+5 VDC at 22 Amps, +12 VDC at 6.8 Amps, -5 VDC at 0.5 Amps, -12 VDC at 0.5 Amps
Frequency (Europe only)	47 to 63 Hz
Cables	Three to main system board; five to mass storage devices

Option Slot Power Limits

Maximum current	+5 Volts	+12 Volts	–5 Volts and -12 Volts
For each slot	7 Amps	1.5 Amps	0.5 Amps
For all six slots	16 Amps	3 Amps	0.5 Amps

Environmental Requirements

Condition	Operating range	Nonoperating range	Storage range
Temperature	41° to 95° F (5° to 35°C)	–4° to 140° F (–20° to 60°C)	–4° to 140° F (–20° to 60°C)
Humidity (non-condensing)	20% to 80%	10% to 90%	10% to 95%
Altitude	–300 to 9,900 ft (–100 to 3,000 m)	–300 to 11,880 ft (–100 to 3,600 m)	–300 to 39,600 ft (–100 to 12,000 m)
Maximum wet bulb	68° F (20°C)	104° F (40°C)	134° F 57°(C)

Physical Characteristics

Width	17 inches (432 mm)
Depth	16 inches (406 mm)
Height	6 inches (153 mm)
Weight	Single diskette drive model (without keyboard): 26 lb (11.8 kg)

Extended VGA Modes

Mode*	Size	Type	Color	DotCLK	MemCLK	Mode type
60	132 x 25	Text (8x16)	16	40 MHz	56 MHz N	I
61	132 x 50	Text (8x8)	16	40 MHz	56 MHz	NI
62	132x43	Text (8 x 8)	16	40 MHz	56 MHz	NI
64	80x43	Text (8 x 8)	16	25 MHz	56 MHz	NI
65	80x50	Text (8 x 8)	16	25 MHz	56 MHz	NI
6A/70	800 x 600	Planar	16	40 MHz	56 MHz	NI
72	1k x 768	Planar	16	45 MHz	56 MHz	I
78	640 x 400	PackPixel	256	50 MHz	56 MHz	NI
79	640 x 480	PackPixel	256	50 MHz	56 MHz	NI
7C	800 x 600	PackPixel	256	72 MHz	65 MHz	NI

* These modes require 512KB of video memory (mapped into VGA memory).

NI = Non-interlaced

I = Interlaced

Wingine Modes

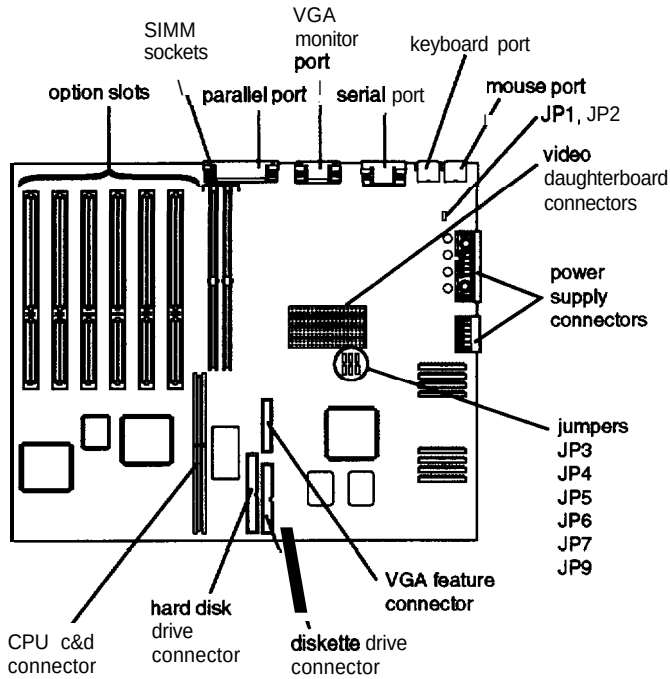
Mode*	Size	Type	Color	DotCLK	MemCLK	Mode type
30	640 x480	Pa&Pixel	256	25 MHz	56 MHz N	I
32	800 x 600	PackPixel	256	40 MHz	56 MHz	NI
34	1k x 768	PackPixel	256	65 MHz	56 MHz	NI
36	1k x 768	PackPixel	256	45 MHz	56 MHz	I
3A	1280 x 1k	PackPixel	256	75 MHz	56 MHz	I
40	640 x 480	PackPixel	15 bit	50 MHz	56 MHz	NI
41	640 x 480	PackPixel	16 bit	50 MHz	56 MHz	NI
42	800 x 600	PackPixel	15 bit	50 MHz	56 MHz	NI
43	800 x 600	PackPixel	16 bit	50 MHz	56 MHz	NI
50	640 x 480	PackPixel	24 bit	75 MHz	56 MHz	NI

* These modes require 1 MB of video memory (mapped into extended memory), except modes 3A and 50, which require 2MB of video memory.

NI = Non-interlaced

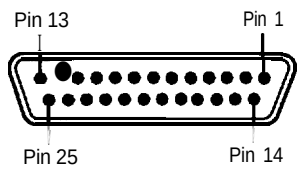
I = Interlaced

Main System Board Map



Connector Pin Assignments

Parallel Port Connector (CN4)



Parallel Port Connector Pin *Assignments*

Pin	Signal	Pin	Signal	Pin	Signal
1	STROBE	10	ACK*	19	SIGNAL GND
2	DATA0	11	BUSY	20	SIGNAL GND
3	DATA1	12	PE	21	SIGNAL GND
4	DATA2	13	SELECT	22	SIGNAL GND
5	DATA3	14	AUTO*	23	SIGNAL GND
6	DATA4	15	ERROR*	24	SIGNAL GND
7	DATA5	16	INIT*	25	SIGNAL GND
8	DATA6	17	SELECTIN*		
9	DATA7	18	SIGNAL GND		

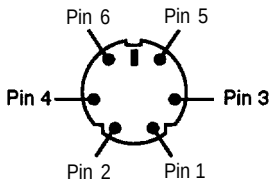
● Active Low Logic

Serial Port Connector (CN3)

Serial Port **Connector** *Pin Assignments*

Pin	Signal	Pin	Signal
1	Data Carder Detect	6	Data Set Ready
2	Receive Data	7	Request To Send
3	Transmit Data	6	Clear To Send
4	Data Terminal Ready	9	Ring Indicator
5	Not used		

Keyboard and Mouse Connector (CN2 and CN1)



Although the keyboard and mouse connectors are physically identical, they cannot be used interchangeably.

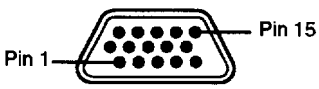
Keyboard Connector Pin *Assignments*

Pin	Signal	Pin	Signal
1	Keyboard Data	4	+5 VDC
2	Reserved	5	Keyboard Clock
3	Ground	6	Reserved

Mouse Connector Pin Assignments

Pin	Signal	Pin	Signal
1	Mouse Data	4	+5 VDC (fused)
2	Reserved	5	Mouse Clock
3	Ground	6	Reserved

VGA Port Connector (CN1)



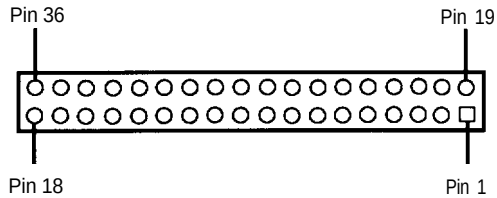
The VGA port connector (CN1) on either the standard or enhanced daughterboard is a 15pin, D-shell, female receptacle, accessible **from the** rear of the computer.

VGA Port Connector Pin Assignments

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	6	Ground	11	Reserved
2	Green	7	Ground	12	Reserved
3	Blue	8	Ground	13	Horizontal Sync
4	Green	9	NC	14	Vertical Sync
5	Reserved	10	Ground	15	NC

VGA Daughterboard Connectors (CN23, CN24, CN25, CN26)

There are four VGA daughterboard **connectors. The** connectors (36-pin headers) provide the video interface between the board and the video controller. They are physically identical, but the pinouts for each are different.



VGA Daughterboard Connector Pin Assignments

CN23				CN24			
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	Gnd	2	PA0	1	FLD	2	/HICOLOR
3	PCLK	4	Gnd	3	MDET	4	/BBLANK
5	Gnd	6	PA1	5	SERCLK	6	HSYNC
7	VDATA0	8	Gnd	7	Gnd	8	VSYNC
9	VDATA1	10	Gnd	9	SBD0	10	WCLKIN
11	VDATA2	12	Gnd	11	SBD1	12	Gnd
13	VDATA3	14	Gnd	13	SBD2	14	SAD0
15	VDATA4	16	Gnd	15	SBD3	16	SAD1
17	VDATA5	18	Gnd	17	SBD4	18	SAD2
19	VDATA6	20	Gnd	19	SBD5	20	SAD3
21	VDATA7	22	Gnd	21	SBD6	22	SAD4
23	Gnd	24	/PALRD	23	SBD7	24	SAD5
25	D0	26	/PALWR	25	Gnd	26	SAD6
27	D1	28	Vcc	27	/VCAS3	28	SAD7
29	D2	30	Vcc	29	/VCAS2	30	Gnd
31	D3	32	Vcc	31	/VCAS1	32	/RESTDRV
33	D4	34	D7	33	/VCAS0	34	PA14
35	D5	36	D6	35	/VRAS0	36	PA15
CN25				**CN26**			
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	/VWE	2	SCD0	1	VMD0	2	VMD16
3	/DOW	4	SCD1	3	VMD1	4	VMD17
5	BDSF	6	SCD2	5	VMD2	6	VMD18
7	/SOE1	8	SCD3	7	VMD3	8	VMD19
9	/VCAS3	10	SCD4	9	VMD4	10	VMD20
11	/VCAS2	12	SCD5	11	VMD5	12	VMD21
13	/VCAS1	14	SCD6	13	VMD6	14	VMD22
15	/VCAS0	16	SCD7	15	VMD7	16	VMD23
17	Gnd	18	Gnd	17	Gnd	18	Gnd
19	VMA0	20	SDD0	19	VMD8	20	VMD24
21	VMA1	22	SDD1	21	VMD9	22	VMD25
23	VMA2	24	SDD2	23	VMD10	24	VMD26
25	VMA3	26	SDD3	25	VMD11	26	VMD27
27	VMA4	28	SDD4	27	VMD12	28	VMD28
29	VMA5	30	SDD5	29	VMD13	30	VMD29
31	VMA6	32	SDD6	31	VMD14	32	VMD30
33	VMA7	34	SDD7	33	VMD15	34	VMD31
35	VMA8	36	Gnd	35	Vcc	36	Vcc

DMA Channels

Channel	Function
0 (CTRL 1)	Spare
1 (CTRL 1)	SDLC
2 (CTRL 1)	Floppy disk drive controller
3 (CTRL 1)	Spare
4 (CTRL 2)	Cascade for CTRL 1
5 (CTRL 2)	Spare
6 (CTRL 2)	Spare
7 (CTRL 2)	Spare

Hardware Interrupts

CTRL1	CTRL2	Function
IRQ0		Timer Output 0
IRQ1		Keyboard
IRQ2		Interrupt from Controller 2
IRQ3		Serial port 2
IRQ4		Serial port 1
IRQ5		Parallel port 2
IRQ6		Floppy disk interrupt
IRQ7		Parallel port 1
	IRQ8	RTC interrupt
	IRQ9	Software redirected to IRQ2
	IRQ10	Reserved
	IRQ11	Reserved
	IRQ12	Mouse, pointing device
	IRQ13	Coprocessor
	IRQ14	Hard disk controller
	IRQ15	Reserved

I/O Port Addresses

Address	Assigned device
000 - 01F	DMA controller 1
MO-021	Interrupt controller 1
40 - 05F	Timer/counter
060 - 06F	Keyboard controller (8042)
070 - 07F	RTC. NMI mask register
080 - 09F	DMA page registers, MFG port
OAO - OBF	interrupt controller 2 (8259A compatible)
OCO - ODF	DMA controller 2 (8237A-5 compatible)
0F0	Clear math coprocessor busy
OF1	Reset math coprocessor
OF8 - OFF	Math coprocessor
170 - 178	Hard disk controller secondary
1B0 - 1B5*	Configuration registers
1BF*	Configuration register unlock port 1
1F0 - 1F7	Hard disk controller primary
200 - 207	Game I/O
278 - 27F	Printer port 2 (27B and 27F are unused)
27B*	Configuration register unlock port
2F8 - 2FF	Serial port 2
300 - 31F	Prototype card
370 - 377	Floppy disk drive controller secondary
378 - 37F	Parallel printer port 1 (37B and 37F are unused)
37B*	Configuration register unlock port 2
380 - 38F	SDLC, bisynchronous communication 2

I/O Port *Addresses (continued)*

Address	Assigned device
3A0 - 3AF	Bisynchronous communication 1
3B0 - 3BF	Monochrome display and printer adapter
3D0 - 3DF	Color/graphics monitor adapter
3F0 - 3F7	Floppy disk drive controller primary
3F8 - 3FF	Serial port 1

*These I/O address ports are configuration registers.

Jumper Settings

See the Main System Board Map on page 3 for the location of the jumpers on the main system board.

Main System Board Jumper Settings

Jumper number	Jumper setting	Function
JP1**	A' B	Diskless mode disabled Diskless mode enabled
JP2**	A' B	Diskless mode disabled Diskless mode enabled
JP3	A' B	Enables the built-in mouse port Disables the built-in mouse port so you can use an external mouse port on an option card
JP4	A B*	Enables an external mouse port on an option card disables an external mouse port
JP5	A' B	Color monitor is installed Monochrome monitor is installed
JP6	A B*	Diiies the password function Enables the password function
JP7	A' B	Enables the built-in VGA display adapter Disables the built-in VGA display adapter so you can use a display adapter on an option card
JP9	—	Reserved

* Factory setting

** JP1 and JP2 must be set together.

CPU Card Jumpers

Three CPU cards are available for the Progression: 486SX/25, 486DX/33, and 486DX2/66. The jumper on the 486SX/25 card should always be set to position B. The 486DX2/66 card has no jumpers. Set the jumpers on the 486DX/33 card according to the table below.

486DX/33 CPU *Card Jumpers*

CPU card configuration	Jumper setting		
	W1	W2	W3
Card only; no OverDrive module	A	A	A
ODP486DX/33 module installed	A	A	B

OverDrive Modules

If you have the 486SX/25 or 486DX/33 CPU card, you can install an Intel OverDrive module on the card to effectively double the internal clock speed of the computer s microprocessor. Although there is an OverDrive socket on the 486DX2/66 card, there is no OverDrive module available for it at this time.

Available OverDrive Modules

CPU card	**OverDrive** module
486SX/25	ODP486SX/25 *
486DX/33	ODP486DX/33

* If you install this module, you cannot also install a 487SX/25 microprocessor chip because both options require the same socket

SIMM Installation

There are two SIMM sockets on the main system board, next to the option slots. You can install 36-bit, fast-page mode SIMMs that operate at an access speed of 70ns or faster, with a capacity of lMB, 4MB, 16MB, or 64MB.

The following table shows the possible SIMM configurations; do not install memory in any other configuration. Make sure that both SIMMs operate at the same speed. There is 4MB of memory soldered onto the main system board.

SIMM Configurations

Socket U11	Socket U12	Total memory
		4MB *
1MB	1MB	6MB
4MB	4MB	12MB
16MB	16MB	36MB
64MB **	64MB **	128MB†

* Standard soldered memory

** Check with your dealer to see if this SIMM is available

† With this memory configuration, the 4MB of soldered memory is disabled.

Hard Disk Drive Types

The following table lists the types of hard disk drives you can use in the computer. Check this table and the documentation supplied with your hard disk to find the correct number for the type of hard disk drive(s) installed in your computer. You need to enter this number when you set the hard disk drive configuration in the SETUP program.

Hard Disk Drive Types

Type no.	Cylinders (CYL)	Heads (HDS)	Precomp	Landing zone	Sectors (SEC)	Size* (In MB)	Drive name/ manufacturer
1	306	4	128	305	17	10	
2	615	4	300	615	17	20	ST-225, ST-4026, WD-93024
3	615	6	300	615	17	30	ST-138A †
4	940	8	512	940	17	62	
5	940	6	512	940	17	46	
6	615	4	none	615	17	20	CP-3024, ST-125, ST-125A, ST-325A
7	462	8	256	511	17	30	
8	733	5	none	733	17	30	ST-4038
9	900	15	none	901	17	112	
10	820	3	none	820	17	20	
11	855	5	none	855	17	35	
12	855	7	none	855	17	49	
13	306	8	128	319	17	20	
14	733	7	none	733	17	42	
15							reserved
16	612	4	0	663	17	20	
17	977	5	300	977	17	40	CDC 94205-51, CP-3044 †, CP-2044 †, 7040 †, 8051A †
18	977	7	none	977	17	56	
19	1024	7	512	1023	17	59	CP-2064
20	733	5	300	732	17	30	MK-133FA
21	733	7	300	732	17	42	MK-134FA, ST-157A †
22	733	5	300	733	17	30	
23	306	4	0	336	17	10	
24	903	4	"One	902	46	81	CP-30084 ‡
25	776	8	"One	775	33	100	CP-3104
26							- reserved -
27	698	7	300	732	17	40	
28	976	5	488	977	17	40	
29							- reserved -
30							- reserved -
31	732	7	300	732	17	42	
32	1023	5	none	1023	17	42	
33	901	5	none	900	53	116	LPS120AT ‡
34	723	13	none	722	51	234	LPS240AT ‡
35	934	16	none	933	17	124	MK2124FC
36							- reserved -
37	683	16	none	682	38	202	CP-3204F
38	548	8	none	547	38	81	CP-2084
39	761	8	none	760	39	115	CP-30104
40	980	10	none	979	17	81	7080A, MK2024FC
41	1022	5	none	1022	34	84	CDC 94216-106 (ESDI)
42	1022	5	none	1022	36	89	CDC 94216-106
43	1024	8	512	1023	17	68	1325, 3085, LAN64, XT1085, NDR1085
44	828	10	none	828	34	137	MK-156F
45	1024	5	512	1023	17	42	
46	615	8	128	618	17	40	

• Actual size when formatted may be slightly different than the size listed on the drive label.

† Hard disk drive supported in translate mode

‡ Epson drives

Installation/Support Tips

Power

This computer has an automatic input voltage sensing power supply (between 115V, for USA and Canadian use, and 230V, for use in other countries). There is no manual switch.

Mouse and Keyboard

- When connecting the mouse and keyboard, be careful to plug them into the proper ports. Although they are physically identical, they are not interchangeable, and damage may occur to the ports or the main board.

Installing Diskette Drives

- When installing a third-party diskette drive as drive B, you may need to set the drive select jumper to the second position and attach the pass-through connector on the floppy drive controller cable to the drive, not to the end connector.
- If the drive does not function normally, make sure that the drive type has been correctly selected in SETUP. Also check that any necessary drivers have been installed correctly.

Installing Hard Disk Drives

- It is recommended that a 16-bit, AT-type hard disk controller be used if you are installing a drive that cannot use the embedded IDE interface. Installing a 16-bit interface will override the embedded IDE port and disable it, freeing the standard base I/O address and IRQ(s).

SETUP

- When installing a hard disk drive, be sure to consult the drive type table for the drive type parameters (geometry) which fit the drive you are installing. You can also select a type with parameters having lesser values, as long as they do not exceed the maximum capacity (in MB) of your drive. If there is no match for your drive, enter the exect parameters using the User Defined option.

Software Problems

- When installing a copy-protected software package, first try the installation at high speed. If this does not work properly, try switching to low speed for theinstallation. If you are still unable to load the program at high speed, try loading at low speed and then switching to high speed.
- Processor speed varies depending on the CPU card installed. For the 486SX/25, high speed is 25 MHz; for the 486DX/33, high speed is 33 MHz; and for the 486DX2/66 card, high speed is 66 MHz. All systems simulate 8 MHz at low speed.
- When using a software package that uses a key disk as its copy-protection method, try loading it at high speed. If this does not work, enable Auto Speed in SETUP.

Power-on Password

- Make sure that you do not forget the Power-on password you set up. If you do, it will be necessary to disable it by moving jumper JP6 on the main circuit board to position A.

Information Reference List

Engineering Change Notices

None.

Technical Information Bulletins

None.

Product Support Bulletins

None.

Related Documentation

TM-PROGRESS	Epson Progression Service Manual
PL-PROGRESS	Epson Progression Parts Price List
SPKPROGRESS	Epson Progression Self Paced Kit
Y74599100200	Epson Progression Setup Guide
Y74599100100	Epson Progression User s Guide
Y74599100300	Epson Progression VGA Utilities Guide